MILITARY SPECIFICATION SHEET

ELECTRON TUBE, POWER

TYPE 7248

The complete requirements for procuring the electron tube described herein shall consist of this document and the latest issue of Specification MIL-E-1.

DESCRIPTION: Tetrode

See figure 1

Mounting position: See note 2

Weight: 2.5 pounds nominal

ABSOLUTE RATINGS:

Parameter:	Ef	Ebb	eb	Ec1	Ec2	ik	Pg1	Pg2
Unit:	V	kVdc	kV	Vdc	Vdc	a	W	W
Oil immersed:	6.3 ±5%	125 (see note 1)	125	-600	1,500	2.0	10	20
TEST CONDITIONS:	6.3	---	---	---	1,000	---	---	---

ABSOLUTE RATINGS:

Parameter:	Pp	Glass temp	Insulation and cooling	T(coolant)
Unit:	W	°C	--- (minimum)	°C
Oil immersed	200	150	See note 2	75 (see note 5)
Air insulation:	---	150	See note 3	---
TEST CONDITIONS:	---	---	See note 4	---

GENERAL:

Qualification - Required (see note 12)

Ⓑ denotes changes

METHOD	REQUIREMENT OR TEST	CONDITIONS	AQL (PERCENT DEFECTIVE)	INSPECTION LEVEL OR CODE	SYMBOL	LIMITS MIN	LIMITS MAX	UNIT
	Quality conformance inspection, part 1							
---	Positive grid drive	Ec1 = -150 Vdc; ec1 = 200 v; Ebb = 2,000 Vdc; tp = 160 μs (max); prr = 15 (max) (see note 6)	0.65	II	ic1 ic2 ib	--- --- 900	140 250 1,570	ma ma ma
---	High-voltage stability	Ec2 = Ek = 0; Ec1 = -500 Vdc; Ebb = 125 kVdc; Rp = 1.0 Meg (max); t = 30 min (max) (see note 7)	0.65	II	---	---	---	---
1261	Electrode voltage (grid)	Ebb = 125 kVdc; Rp = 1.0 Meg (max); Ec1 ΔIb = 20 μAdc (see note 8)	0.65	II	Ec1	---	-420	Vdc
	Quality conformance inspection, part 2							
1301	Filament current	Ef = 6.3 V (see note 4)	---	---	If	10.0	13.5	A
1266	Total grid current	Ebb = 1,200 Vdc; Ec1 Ib = 0.165 Adc; Ic2 = 0.02 Adc (max); t = 5 minutes (see notes 9 and 10)	---	---	Ic1	---	-50	μAdc
	Quality conformance inspection, part 3							
---	Service-life guarantee	See note 11	---	---	---	---	---	---

NOTES:

(B) 1. When the tube is first installed, or after tube has been inoperative over a period of time, anode voltage, when first applied, shall be increased gradually from 75 kV to 125 kV, over a 10-minute period, in accordance with the manufacturer's recommendations. Warning: Operation of this tube may produce X-ray radiation. Adequate radiation protection shielding shall therefore be provided.

2. When immersed in oil horizontally, the tube will be cooled by natural convection. When the tube is operated vertically in oil, the re-entrant portion of the cathode end of the tube shall be cooled by forcing oil through the center pin No. 5 of the cathode base before and during the application of filament voltage at a minimum flow of 3 pints per minute. For oil insulation, the tube shall be immersed in a high-grade, low-viscosity insulating oil having a dielectric strength not less than 25,000 peak volts/0.1 inch when tested per ASTM test D-877.

3. When the tube is air tested and the tube is in any position, the re-entrant portion of the cathode end of the tube shall be cooled by forcing air through the center pin No. 5 of the cathode base before and during application of filament voltage at a minimum flow rate of 1-1/2 cfm.

4. All tests to be performed with the tube immersed horizontally in insulating oil as described in note 2. Filament current test may be done in air as described in note 3.

5. Coolant temperature indicated is average temperature of oil surrounding tube and temperature of incoming oil to cathode when mounted vertically.

NOTES: -Continued

6. The positive pulse voltage, ec1, is measured between control grid and cathode. e amplitude of the voltage and current pulses shall be measured approximately at the middle of the pulse.

7. This test may be preceded by an aging period at reduced anode voltage of a duration not exceeding 10 minutes. The tube shall operate during the last 10-minute period with no more than two flashes. Total test time, excluding aging, not to exceed 30 minutes. Flashes shall be interpreted as luminescence within the vacuum space of the tube. Fluorescence of the glass surfaces of the tube shall not be considered a flash. Flashes may be counted by an electronic device, operation of which is based on the anode current surge which accompanies the flash.

8. Read Ib at Ec1 = -500 Vdc. Then make Ec1 less negative to the point where Ib increases by the indicated amount.

9. If impossible to obtain 0.165 ampere anode current without exceeding 0.020 ampere screen current, it shall be permissible to adjust anode voltage until such conditions are obtained, provided no ratings are exceeded.

10. To be performed prior to positive grid drive test.

11. The tube manufacturer warrants the tube for one year from the date of shipment, or 1,000 hours of heater life (whichever occurs first). This warranty applies only when the tube is operated within the maximum ratings (see "Absolute ratings" of MIL-E-1). A defective tube shall either be replaced, or at the option of the manufacturer credit shall be made in the amount of the original purchase price prorated on the basis of 1,000 hours of "heater-on" time.

12. With respect to products requiring qualification, awards will be made only for such products as have, prior to the time set for opening of bids, been tested and approved for inclusion in the applicable Qualified Products List (QPL) whether or not such products have actually been so listed by that date. The attention of the suppliers is called to this requirement, and manufacturers are urged to arrange to have the products that they propose to offer to the Federal Government tested for qualification in order that they may be eligible to be awarded contracts or order for the products covered by this specification. The activity responsible for the Qualified Products List is Commander, Rome Air Development Center, Atten: RCRC, Griffiss AFB, New York 13440; however, information pertaining to qualification of products may be obtained from Defense Electronics Supply Center, Attention: DESC-EQP, Dayton, Ohio 45401.

Custodian:
Air Force - 17

Review activities:
Air Force - 11, 70, 80
DSA - ES

Preparing activity: Air Force - 17

Agent: DSA - ES

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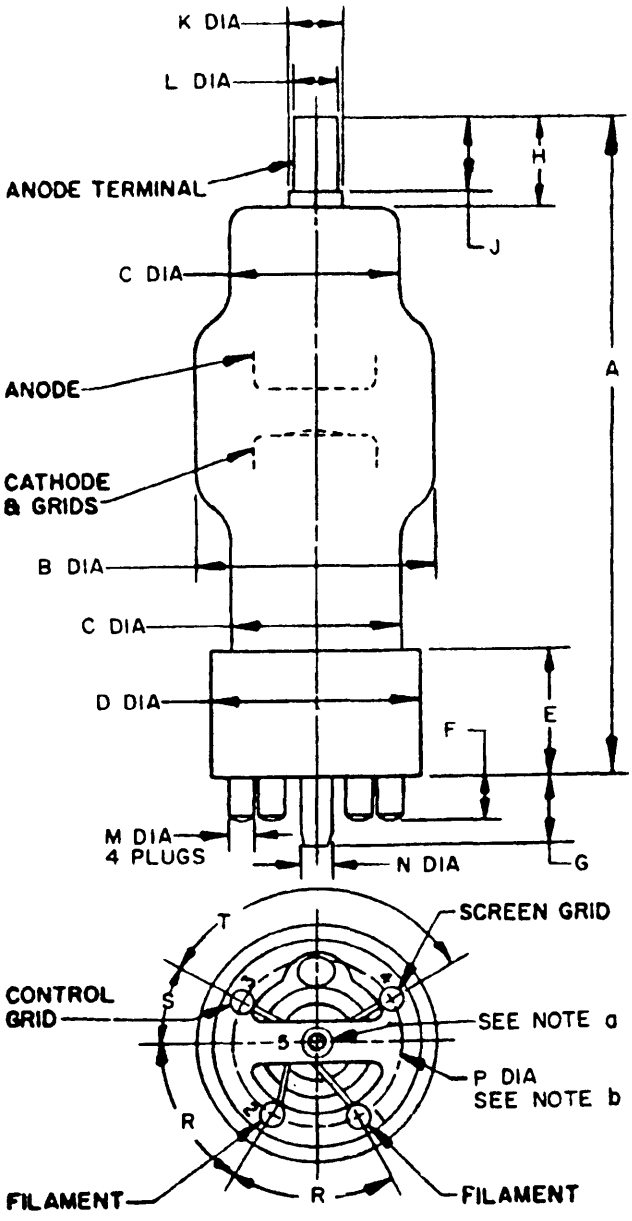

Ltr	Dimensions in inches with metric equivalents (mm) in parentheses	
	Minimum	Maximum
Quality conformance inspection, part 2		
A	9.562(242.87)	9.938(252.43)
B		3.625 (92.08)
C		2.625 (66.68)
D	3.000 (76.20)	3.063 (77.80)
E	1.812 (46.02)	1.936 (49.17)
F		.625 (15.88)
G	.969 (24.61)	1.031 (26.19)
H	1.188 (30.18)	1.438 (36.53)
J	1.063 (27.00)	1.125 (28.58)
K	.719 (18.26)	.781 (19.84)
L	.594 (15.09)	.656 (16.66)
M	.370 (9.40)	.380 (9.65)
N	.432 (10.97)	.442 (11.23)
P	2.490 (63.25)	2.510 (63.75)
R	58°	62°
S	28°	32°
T	118°	122°

NOTES:
a. Inlet tube for forced oil or air cooling (.156 inch(3.96 mm) I.D.).
b. Four pins located on circle diameter P.

FIGURE 1. Outline drawing of electron tube type 7248.